

<b>Module title</b>		<b>Abbreviation</b>
Advanced Programming		10-I=APR-212-m01
<b>Module coordinator</b>		<b>Module offered by</b>
holder of the Chair of Computer Science II		Institute of Computer Science
<b>ECTS</b>	<b>Method of grading</b>	<b>Only after succ. compl. of module(s)</b>
5	numerical grade	--
<b>Duration</b>	<b>Module level</b>	<b>Other prerequisites</b>
1 semester	graduate	--
<b>Contents</b>		
<p>With the knowledge of basic programming, taught in introductory lectures, it is possible to realize simpler programs. If more complex problems are to be tackled, suboptimal results like long, incomprehensible functions and code duplicates occur. In this lecture, further knowledge is to be conveyed on how to give programs and code a sensible structure. Also, further topics in the areas of software security and parallel programming are discussed.</p>		
<b>Intended learning outcomes</b>		
<p>Students learn advanced programming paradigms. Different patterns are then implemented in multiple languages and their efficiency measured using standard metrics. In addition, parallel processing concepts are introduced culminating in the use of GPU architectures for extremely quick processing.</p>		
<b>Courses</b> (type, number of weekly contact hours, language – if other than German)		
V (2) + Ü (2)		
<b>Method of assessment</b> (type, scope, language – if other than German, examination offered – if not every semester, information on whether module is creditable for bonus)		
<p>written examination (approx. 60 to 120 minutes). If announced by the lecturer at the beginning of the course, the written examination may be replaced by an oral examination of one candidate each (approx. 20 minutes) or an oral examination in groups of 2 candidates (approx. 15 minutes per candidate). creditable for bonus Language of assessment: German and/or English</p>		
<b>Allocation of places</b>		
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<b>Additional information</b>		
<p>Focuses available for students of the Master's programme Informatik (Computer Science, 120 ECTS credits): SE, KI, LR, HCI, ES, GE, SEC</p>		
<b>Workload</b>		
150 h		
<b>Teaching cycle</b>		
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<b>Referred to in LPO I</b> (examination regulations for teaching-degree programmes)		
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<b>Module appears in</b>		
<p>Master's degree (1 major) eXtended Artificial Intelligence (xtAI) (2020) Master's degree (1 major) Computer Science (2021) Master's degree (1 major) Aerospace Computer Science (2021) Master's degree (1 major) Computational Mathematics (2022) Master's degree (1 major) Information Systems (2022) Master's degree (1 major) Mathematics (2022) Master's degree (1 major) Computer Science (2023)</p>		

Master's degree (1 major) Aerospace Computer Science (2023)  
Master's degree (1 major) Artificial Intelligence & Extended Reality (2024)  
Master's degree (1 major) Artificial Intelligence (2024)  
Master's degree (1 major) Computational Mathematics (2024)  
Master's degree (1 major) Mathematics (2024)  
Master's degree (1 major) Information Systems (2024)